deposited oxide (CVD oxide), fluoride doped silicate glass (FSG), phosphorous doped silicate glass (PSG), PE-TEOS, LP-TEOS, nitride and oxynitride;

(c) forming a rough oxide layer overlaying said second dielectric layer;

(d) etching through said second dielectric layer and silicon substrate to form multiple trenches in the isolation region by using said rough oxide as an etching mask; and

(e) removing said rough oxide and second dielectric layers, and then oxidizing said silicon substrate within said trenches to form a field oxide isolation region.

11. The method according to claim **10**, wherein step (e) is first oxidizing said silicon substrate within said trenches to form a field oxide isolation region, and then removing said rough oxide and second dielectric layer.

12. The method according to claim **10**, wherein said first dielectric layer is selecting from the group consisting of silicon dioxide nitride and oxide/nitride double layers.

13. The method according to claim **10**, wherein said second dielectric layer has a thickness of about 50 to 150 Angstroms.

14. The method according to claim **10**, wherein said rough oxide is composed of silicon dioxide formed with reactant gases of ozone and Tetra-Ethyl-Ortho Silicate (O_3-TEOS).

15. The method according to claim **14**, wherein said O_3-TEOS is deposited in an environment with ozone concentration greater than 4%.

16. The method according to claim **14**, wherein said O_3-TEOS is deposited at a temperature range between 300° C. to 600° C.

17. The method according to claim **14**, wherein said O_3-TEOS is deposited at a pressure range between 300 to 760 Torr.

18. The method according to claim **10**, wherein said trenches are about 2000 to 4000 Angstroms deep.

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